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Mapping the Navy Innovation Network Using Social Network Analysis

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Mapping the Navy Innovation Network Using Social Network Analysis

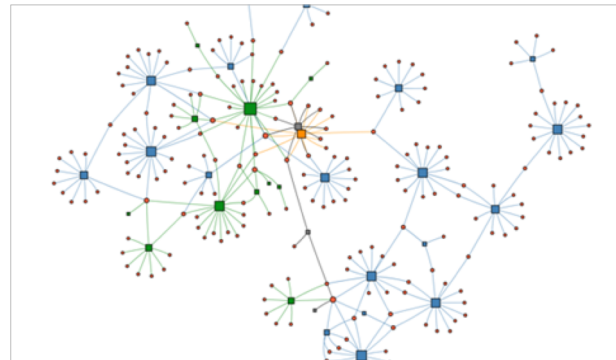


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Research Questions

This research sought answers to the following questions:

- A - What are the key nodes and networks in the Navy Innovation Network?
- B - What are the ties that link together members of the informal network?
- C - How could we more effectively bridge together individuals and clusters within the social network of Navy innovators (from the deck plates up)?
- D - How can we measure the growth and effectiveness of Navy innovation networks to enhance collaboration?
- E - Can we longitudinally measure the impact Navy formal and informal innovation networks have on enhancing the Navy's effectiveness and rapid prototyping capabilities?
- F - What strategies would be best suited to move innovation from the deck plates to those best placed to adopt new ideas for rapid prototyping?



Two Mode Network of People (circles) Connected to Events (squares)



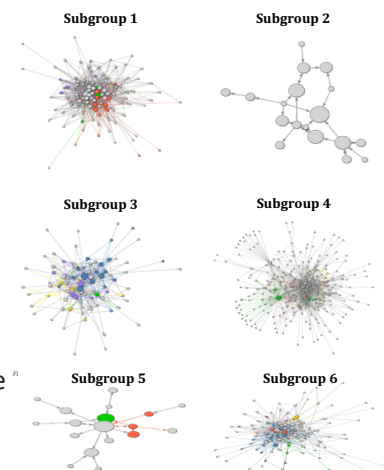
Community Subgroups Based on Retweets, Replies, and Mentions

Methodology

- By employing the tools of social network analysis and big data integration from existing databases, the collection and collation of relational and attribute data among stakeholders in physical and virtual space was analyzed using community detection algorithms for insights that might contribute to the Navy's ability to better leverage creative ideas for pragmatic solutions.
- One and two mode social networks matrices of people, events, topics, and twitter accounts were developed, graphed, and mathematically analyzed.

Findings

- Our research found that official, or organizational, accounts can play a role as key hubs or brokers of information; while individuals can serve as authorities, or sources of information. We identified several of these.
- Of seven subgroups identified using a community detection algorithm to analyze the Retweets, Replies, and Mentions Twitter innovation network, three subgroups were of particular interest to the Navy: Subgroups 4 (Navy Innovation subgroup), 3 (Navy Leadership subgroup), and 6 (Navy Topics subgroup). It was found that in many cases, ties were stronger among nodes that belonged to both the twitter network and the events network.
- It is apparent from the preliminary social network analysis that it is possible to dynamically update and periodically measure and assess the NIN network and the number and strength of ties to the wider innovation community.



Recommendations

- The Navy may benefit from using official Navy accounts in Subgroup 3 (Navy Leadership) to pass along information generated in Subgroup 4 (Navy innovation subgroup). This information could be targeted towards accounts in Subgroup 6 (as conduits for Navy topics of interest).
- By monitoring the number of innovations originating in the NIN that subsequently result in Fleet implementation and/or rapid prototyping, and conducting correlation analysis, the Navy should assess the impact the NIN is having on the enhancement of Navy capabilities over time.



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